

P 14-33-38, 42-47 (all)
 P 636 39-46 all
 P 339 16-17

p 79

$$\textcircled{33} (3z^3 - 9z^2 + 6) + (4z^3 - 8z + 3) \quad \textcircled{34} 2(3y^6 - 9y^2 + 2y) - (5y^6 - 10y^2 - 4y)$$

$$\boxed{7z^3 - 9z^2 - 8z + 9} \quad \boxed{y^6 - 8y^2 + 8y}$$

$$\textcircled{35} (8y - 7)(2y + 7)$$

$$16y^2 + 56y - 14y - 49$$

$$\boxed{16y^2 + 42y - 49}$$

$$\textcircled{36} (2r + 11s)(4r - 9s)$$

$$8r^2 - 18rs + 44rs - 99s^2$$

$$\boxed{8r^2 + 26rs - 99s^2}$$

$$\textcircled{37} (3k - 5m)^2$$

$$\boxed{9k^2 - 30km + 25m^2}$$

$$\textcircled{38} (4a - 3b)^2$$

$$\boxed{16a^2 - 24ab + 9b^2}$$

$$\textcircled{42} (x + 2y)^4$$

$$x^4 + 4x^3(2y) + 6x^2(2y)^2 + 4x(2y)^3 + (2y)^4$$

$$\boxed{x^4 + 8x^3y + 24x^2y^2 + 32xy^3 + 16y^4}$$

$$\textcircled{43} \left(\frac{k}{2} - g\right)^5$$

$$\left(\frac{k}{2}\right)^5 - 5\left(\frac{k}{2}\right)^4g + 10\left(\frac{k}{2}\right)^3g^2 - 10\left(\frac{k}{2}\right)^2g^3 + 5\left(\frac{k}{2}\right)g^4 - g^5$$

$$\boxed{\frac{k^5}{32} - \frac{5}{16}k^4g + \frac{5}{4}k^3g^2 - \frac{5}{2}k^2g^3 + \frac{5}{2}kg^4 - g^5}$$

(44)

$$\begin{array}{r} 9r+4 \\ 8r+3 \overline{) 72r^2 + 59r + 12} \\ \underline{-72r^2 + 27r} \\ 32r + 12 \\ \underline{-32r + 12} \\ 0 \end{array}$$

$$\boxed{9r+4}$$

(46)

$$\begin{array}{r} 5m-7+\frac{10m}{m^2-2} \\ m^2-2 \overline{) 5m^3 - 7m^2 + 0m + 14} \\ \underline{-5m^3} \\ -7m^2 + 10m + 14 \\ \underline{+7m^2} \\ 10m + 14 \end{array}$$

$$\boxed{5m-7+\frac{10m}{m^2-2}}$$

10m

(45)

$$\begin{array}{r} 6m^2-3m+5 \\ 5m+1 \overline{) 30m^3 - 9m^2 + 22m + 5} \\ \underline{-30m^3 + 6m^2} \\ -15m^2 + 22m + 5 \\ \underline{+15m^2 + 3m} \\ 25m + 5 \\ \underline{-25m + 5} \\ 0 \end{array}$$

$$\boxed{6m^2-3m+5}$$

(47)

$$\begin{array}{r} 3b-8+\frac{2}{b^2+4} \\ b^2+4 \overline{) 3b^3 - 8b^2 + 12b - 30} \\ \underline{-3b^3} \\ -8b^2 + 12b - 30 \\ \underline{+8b^2} \\ -30 + 32 \\ 2 \end{array}$$

$$\boxed{3b-8+\frac{2}{b^2+4}}$$

p636

$$\begin{aligned} (39) (x+2y)^4 &= \binom{4}{0}x^4 + \binom{4}{1}x^3(2y) + \binom{4}{2}x^2(2y)^2 + \binom{4}{3}x(2y)^3 + \binom{4}{4}(2y)^4 \\ &= \boxed{x^4 + 8x^3y + 24x^2y^2 + 32xy^3 + 16y^4} \end{aligned}$$

$$\begin{aligned} (40) (3z-5w)^3 &= \binom{3}{0}(3z)^3 + \binom{3}{1}(3z)^2(-5w) + \binom{3}{2}(3z)(-5w)^2 + \binom{3}{3}(-5w)^3 \\ &= \boxed{27z^3 - 135z^2w + 225zw^2 - 125w^3} \end{aligned}$$

$$\begin{aligned} (41) (3\sqrt{x} - \frac{1}{\sqrt{x}})^5 &= (3x^{1/2} - x^{-1/2})^5 \\ &= \binom{5}{0}(3x^{1/2})^5 + \binom{5}{1}(3x^{1/2})^4(-x^{1/2}) + \binom{5}{2}(3x^{1/2})^3(-x^{1/2})^2 + \binom{5}{3}(3x^{1/2})^2(-x^{1/2})^3 \\ &\quad + \binom{5}{4}(3x^{1/2})(-x^{1/2})^4 + \binom{5}{5}(-x^{1/2})^5 \\ &= \boxed{243x^{5/2} - 405x^{3/2} + 270x^{1/2} - 90x^{-1/2} + 15x^{-3/2} - x^{-5/2}} \end{aligned}$$

$$\begin{aligned} (42) (m^3 - m^{-2})^4 &= \binom{4}{0}(m^3)^4 + \binom{4}{1}(m^3)^3(-m^{-2}) + \binom{4}{2}(m^3)^2(-m^{-2})^2 + \binom{4}{3}(m^3)(-m^{-2})^3 + \binom{4}{4}(-m^{-2})^4 \\ &= m^{12} - 4m^9m^{-2} + 6m^6m^{-4} - 4m^3m^{-6} + m^{-8} \\ &= m^{12} - 4m^7 + 6m^2 - 4m^{-3} + m^{-8} \\ &= \boxed{m^{12} - 4m^7 + 6m^2 - \frac{4}{m^3} + \frac{1}{m^8}} \end{aligned}$$

Unit 4 Day 7 continued

(43) $(4x-y)^8$; 6th $\binom{8}{5}(4x)^3(-y)^5 = \boxed{-3584x^3y^5}$

(44) $(m-3n)^{14}$; 7th $\binom{14}{6}(m)^8(-3n)^6 = 3003 \cdot m^8 \cdot 729 \cdot n^6 = \boxed{2189187m^8n^6}$

(45) 1st 4 of $(x+2)^{12}$

$$\binom{12}{0}x^{12} + \binom{12}{1}x^{11} \cdot 2 + \binom{12}{2}x^{10}(2)^2 + \binom{12}{3}x^9(2)^3$$

$$\boxed{x^{12} + 24x^{11} + 264x^{10} + 1760x^9}$$

* (46) last 3 of $(2a+5b)^{16}$

$$\binom{16}{14}(2a)^2(5b)^4 + \binom{16}{15}(2a)(5b)^5 + \binom{16}{16}(5b)^{16} = \underline{\underline{480 \cdot 5^{14}a^2b^4 + 32 \cdot 5^{15} \cdot ab^{15} + 5^{16}b^{16}}}$$

p339 16-17

(16)
$$\begin{array}{r|rrrr} 3 & 1 & 1 & -11 & -10 \\ & & 3 & 12 & 3 \\ \hline & 1 & 4 & 1 & -7 \end{array}$$

$$\boxed{x^2 + 4x + 1 - \frac{7}{x-3}}$$

(17)
$$\begin{array}{r|rrrr} -2 & 3 & 8 & 5 & 10 \\ & & -6 & -4 & -2 \\ \hline & 3 & 2 & 1 & 8 \end{array}$$

$$\boxed{3x^2 + 2x + 1 + \frac{8}{x+2}}$$